We claim:

1. A method for gas-solid contacting in a bubbling fluidized bed reactor said method comprising:

(a) introducing into a reactor with bed length to bed diameter ratio below about 5.0, a primary gas consisting essentially of reactant(s) of the reaction to be carried out in the bed of solid particles through a primary gas distributor located at the reactor bottom at a superficial gas velocity U_p, which is very close or equivalent to the minimum fluidization velocity U_{mf}, required for achieving the incipient fluidization of the solid particles in the bed to obtain an emulsion phase consisting essentially of the solid particles and the primary gas with little or no formation of gas bubbles to achieve incipient fluidization or liquid-like behaviour of fluidizable solid particles;

(b) forming gas bubbles in the incipiently fluidized bed by introducing through a secondary gas distributor located immediately above the primary gas distributor a secondary gas, selected from one of the reactants which is used in excess of that required for the reaction stoichiometry, steam, an inert or a mixture of two or more thereof at a superficial gas velocity, U_s, which is related to the superficial velocity of the primary gas such that a ratio of the superficial velocity of the secondary gas to the superficial velocity of the primary gas U_s/U_p, is in the range from about 0.5 to about 10.0, preferably from about 1 to about 5.

2. A method as claimed in claim 1 wherein the direct bypassing of the reacting gas through gas bubbles is avoided using a reacting gas only for obtaining an incipient fluidization without forming gas bubbles, while retaining the advantages of bubbling fluidized bed reactor.

3. A method as claimed in claim 1 wherein the reactor comprises a single bubbling fluidized bed reactor or individual bubbling fluidized bed reactors of a multiple reactor system consisting of two or more bubbling fluidized bed reactors with continuous transportation or re-circulation of solid particles between the reactors.

4. A method as claimed in claim 1 wherein the size of the solid particles in the reactor is below 150 um.

5. A method as claimed in claim 1 wherein the reaction comprises a catalytic reaction, a non-catalytic thermal reaction or a non-catalytic gas-solid reaction.

6. A method as claimed in claim 5 wherein the solid particles in the reactor consist essentially of a catalyst useful for catalysing the reaction.

7. A method as claimed in claim 1 wherein the catalytic reactions which can be carried out using said method comprise ammoxidation of propylene or propane to acrylonitrile, oxidation of propylene or propane to acrolein and/or acrylic acid, oxidation of naphthalene or o-xylene to phthalic anhydride, oxidation of benzene or butane to maleic anhydride, Fischer Tropsch synthesis of hydrocarbons and or oxygenates from carbon monoxide and hydrogen, gas phase chlorination or oxychlorination of hydrocarbons, gas phase hydrogenation of organic compounds, fluid catalyst cracking of oil, fluid catalytic reforming of naphtha and other hydrocarbons, reforming of hydrocarbons to synthesis gas, hydrocracking of heavy oil.

8. A method as claimed in claim 1 wherein when said method is used for carrying out a non-catalytic reaction in a bubbling fluidizing bed reactor, the solid particles in the reactor consist of inert solid, such as sand, sintered silica, sintered alumina, sintered silica-alumina, sintered zirconia-haffnia or other sintered and/or refractory material which is chemically inert to the reactants of the thermal reactions.

9. A method as claimed in claim 8 wherein the non-catalytic thermal reactions which are carried out using said method are fluid thermal cracking processes.

10. A method as claimed in claim 9 wherein the fluid thermal cracking process comprises thermal cracking of naphtha and heavy oil.

11. A method as claimed in claim 1 wherein when said method is used for carrying out a non-catalytic gas-solid reaction in a fluidized bed reactor, the solid particles in the reactor consist essentially of solid reactant, such as reducible metal oxides, partially reduced metal oxides, deactivated catalyst due to coking of other solid reactants of known gas-solid reactions, which is converted into product of the reaction.

12. A method as claimed in claim 11 wherein the non-catalytic gas-solid reactions are selected from reduction of metal oxides from ores in metallurgical industries, gasification, of coal combustion of coal or regeneration of coked catalyst by gasification of carbon or coke present in the catalyst.

13. A method as claimed in claim 1 wherein the size of the fluidizable solid particles used in the fluidized bed reactor are in the range of from 30 μm to 150 μm.

14. A method as claimed in claim 1 wherein the primary gas comprises of one or more reactants of the reaction to be carried out in the reactor.

15. A method as claimed in claim 1 wherein the ratio of superficial velocity of secondary gas U_s, to superficial velocity of primary gas U_p, is between 1 and 5.

16. A method as claimed in claim 1 wherein the primary and secondary gases are introduced in the reactor separately, using separate gas distributors.